REMARKS

The present application includes claims 1-31. By this amendment, claims 1, 4, 5, 6, 7, 12, 13, 17, 18, 24, 27, 28, 29, and 30 have been amended.

The Applicants have made the amendment to the abstract that was suggested by the Examiner. The Applicants have made the suggested amendments to claims 1, 4-7, 9, 12-13, 24, and 27-30 to address the Claim Objections. The Applicants have made the suggested amendments to claim 24 to address the Section 101 claim rejection. The Applicants have made the suggested amendments to claims 12-15 and 17-23 to address the Section 112 claim rejection. Claims 1-31 are now believed to be in condition for allowance.

Claims 1-31 stand rejected under 35 U.S.C. § 103(a) as being obvious over Yoshida in view of Bartroli and further in view of Krishnan. Applicants respectfully traverse the rejection.

To establish a prima facie case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P. § 2143 at page 2100-126 (Rev. 5, Aug. 2006). Applicants respectfully submit that Yoshida in view of Bartroli and further in view of Krishnan do not teach or suggest each and every element in the claims 1-31.

For example, claim 1 recites in part, "mapping said display index values from the first set of data to a third set of data". Applicants note (as discussed, for example, at paragraphs 39 and 49 of the Application) that once the display index values are assigned various display attributes, the mapping unit 140 maps, or transforms, the display index values from the first image set 103 into a third image set 109. As mentioned above, the

first image set 103 may be three-dimensional data. In an embodiment, the mapping unit 140 maps, or transforms, the first image set 103 from three dimensional display index values to a third image set 107 which may be two dimensional display index values. The transformation of three dimensional to two-dimensional mapping is accomplished in a similar fashion as discussed above with reference to creating a virtual dissection. However, in an embodiment, instead of distance mapping which may be used to create a virtual dissection, the mapping of the display index values may utilize shape mapping. In shape mapping, a shape attribute is mapped from three dimensions to two dimensions as opposed to mapping the distance from the centerline of a tubular structure from three dimensions to two dimensions.

Since Yoshida in view of Bartroli and further in view of Krishnan individually or combined do not teach each and every element as set forth in claim 1, the obviousness rejection cannot be maintained. It is respectfully requested that the rejection under 35 U.S.C. § 103 be withdrawn with respect to claim 1 and its rejected dependent claims (i.e., claims 2-8).

In addition, claim 9 recites in part, for example, "a mapping unit for mapping said display index values from a first set of data to a third set of data". Applicants note (as discussed, for example, at paragraphs 39 and 49 of the Application) that once the display index values are assigned various display attributes, the mapping unit 140 maps, or transforms, the display index values from the first image set 103 into a third image set 109. As mentioned above, the first image set 103 may be three-dimensional data. In an embodiment, the mapping unit 140 maps, or transforms, the first image set 103 from three dimensional display index values to a third image set 107 which may be two

dimensional display index values. The transformation of three dimensional to two-dimensional mapping is accomplished in a similar fashion as discussed above with reference to creating a virtual dissection. However, in an embodiment, instead of distance mapping which may be used to create a virtual dissection, the mapping of the display index values may utilize shape mapping. In shape mapping, a shape attribute is mapped from three dimensions to two dimensions as opposed to mapping the distance from the centerline of a tubular structure from three dimensions to two dimensions.

Since Yoshida in view of Bartroli and further in view of Krishnan individually or combined do not teach each and every element as set forth in claim 9, the obviousness rejection cannot be maintained. It is respectfully requested that the rejection under 35 U.S.C. § 103 be withdrawn with respect to claim 9 and its rejected dependent claims (i.e., claims 10-16).

In addition, claim 17 recites in part, "selecting various characteristics of the anatomical structure for enhancement". Applicants note (as discussed, for example, at paragraphs 41-44 and 52-55 of the Application), for example, a user may select various characteristics of the structure for enhancement. The various characteristics may be shape, liquid, or fecal matter, among others. Subcategories of characteristics may be created and chosen for enhancement. For example, if the characteristic chosen is shape, subcategories of shapes may be cup, rut, saddle, ridge, and cap.

Since Yoshida in view of Bartroli and further in view of Krishnan individually or combined do not teach each and every element as set forth in claim 17, the obviousness rejection cannot be maintained. It is respectfully requested that the rejection under 35

U.S.C. § 103 be withdrawn with respect to claim 17 and its rejected dependent claims (i.e., claims 18-23).

In addition, claim 24 recites in part, for example, "mapping said display index values from the first set of data to a third set of data". Applicants note (as discussed, for example, at paragraphs 39 and 49 of the Application) that once the display index values are assigned various display attributes, the mapping unit 140 maps, or transforms, the display index values from the first image set 103 into a third image set 109. As mentioned above, the first image set 103 may be three-dimensional data. In an embodiment, the mapping unit 140 maps, or transforms, the first image set 103 from three dimensional display index values to a third image set 107 which may be two dimensional display index values. The transformation of three dimensional to two-dimensional mapping is accomplished in a similar fashion as discussed above with reference to creating a virtual dissection. However, in an embodiment, instead of distance mapping which may be used to create a virtual dissection, the mapping of the display index values may utilize shape mapping. In shape mapping, a shape attribute is mapped from three dimensions to two dimensions as opposed to mapping the distance from the centerline of a tubular structure from three dimensions to two dimensions.

Since Yoshida in view of Bartroli and further in view of Krishnan individually or combined do not teach each and every element as set forth in claim 1, the obviousness rejection cannot be maintained. It is respectfully requested that the rejection under 35 U.S.C. § 103 be withdrawn with respect to claim 24 and its rejected dependent claims (i.e., claims 25-31).

Applicants respectfully note that the Examiner has alleged that, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yoshida's device by attaching the 2D virtual dissection unit for the overlaying unit in order to provide a different visualization technique to further enhance the polyp detection. (See page 7 of 2/12/07 Action). Applicants stress that Yoshida relates to the detection and visualization of polyps in 3D space. (See page 965). The polyp candidates are detected with computation of three-dimensional (3D) geometric features that characterize polyps. (See abstract). Figure 1 illustrates the CAD scheme for the automated detection of polyps in 3D space. All of the Figures of Yoshida relate to display in 3D space and the use of a single set of data for visualization.

In contrast, Applicants respectfully draw the attention of the Examiner to independent claims 1, 9, and 24 which recite the use of at least three data sets for visualization. Nothing in Yoshida teaches or suggests its scheme may be applicable to more than one data set or to 2D visualization. Yoshida actually teaches that its 3D visualization technique is allegedly superior to 2D visualization techniques. (See page 964). Applicants respectfully submit that Yoshida, not only teaches away from the claims as set forth in the present application, but also teaches away from Bartroli which relates to 2D visualization. For example, Yoshida acknowledges its applicability to 3D visualization by stating that, "[t]he conspicuity of polyps may depend on the display methods used; thus, the use of different views improves the detection of polyps." (See page 964). Also, Yoshida states, "[t]he visibility and conspicuity of polyps, and thus the accuracy of polyp detection, may also depend on image acquisition parameters and display methods...". (See page 964). See, e.g., M.P.E.P. § 2145 (X)(D)(1) ("[a] prior art

reference that 'teaches away' from the claimed invention is a significant factor to be considered in determining obviousness"). See also, e.g., M.P.E.P. § 2145 (X)(D)(2) ([i]t is improper to combine references where the references teach away from their combination").

Applicants also respectfully draw the attention of the Examiner to the prohibitions as set forth in M.P.E.P. § 2143.01, which states, "[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is not a suggestion or motivation to make the proposed modification." See M.P.E.P. § 2143.01. There can be no argument that the intended purpose of Yoshida is to visualize polyps in 3D space. Regardless of what Bartroli teaches, Bartroli cannot modify Yoshida to visualize polyps in 2D space because distance mapping is used to create a virtual dissection, while the mapping of the display index values requires additional shape mapping. Applicants respectfully submit that Yoshida cannot be modified by attaching the 2D virtual dissection unit for the overlaying unit in order to provide a different visualization technique to further enhance the polyp detection since such a modification would be a radical departure from Yoshida's intended purpose of visualizing polyps in the 3D space.

Applicants also respectfully draw the attention of the Examiner to the prohibitions as set forth in M.P.E.P. § 2143.01 which states that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the reference are not sufficient to render the claims prima facie obvious." See M.P.E.P § 2143.01. Regardless of what Bartroli teaches, Bartroli cannot modify Yoshida to visualize polyps in 2D space because the

modification would present a radical change or an extreme departure from the principle operation of Yoshida for visualizing polyps in 3D space. Yoshida's mapping is from a 3D space to a 3D space with an implicit idea of not losing any information during the mapping process.

In addition, claims 1, 9, and 24, as amended, link object shapes to the mapping process. Krishnan teaches the ability to use multi-planer reformats with maximum intensity projections (MIP's) to perform 3D to 2D fusion using all of the data. In contrast, the current invention uses selected object shapes and the associated shape attributes to map to a virtual dissected view of the colon.

For at least these reasons, Applicants respectfully submit that Yoshida should be withdrawn as a reference, the combination of Yoshida in view of Bartroli, as well as the combination of Yoshida in view of Bartroli in further view of Krishnan, should be deemed improper and the obviousness rejection should be withdrawn with respect to claims 1-31. Applicant respectfully submits that Applicant has not made any admissions regarding the art cited by the Examiner. Therefore, Applicant respectfully submits that the claims of the present application should be allowable.

CONCLUSION

Accordingly, the application as amended is now believed to be in condition for allowance and an action to this effect is respectfully requested. If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited and encouraged to contact the Applicant at the number below. Applicant believes no fee is due. However, please charge any additional fees or credit overpayment to the Deposit Account of GTC, Account No. 070845.

Respectfully submitted,

Date: April 18, 2007

Brian C. Bianco
Registration No. 51, 471

MCANDREWS, HELD, & MALLOY, LTD.
500 West Madison Street, 34th Floor
Chicago, IL 60661
Telephone: (312) 775-8000
Facsimile: (312) 775-8100